

**Centre for Machine Learning and Intelligence
Interdisciplinary Course
Machine Learning using Excel**

**Semester: II
25MAII01**

**Hours of Instructions / Week: 4
No of Credits:4**

Course Objectives:

1. To know about the basics of data processing using Microsoft Excel.
2. To become familiar in working with common functions in MS Excel sheet.
3. To become familiar in Data Visualization and ML operation in MS Excel.

Unit I: Data Loading & Pre-processing

- 12 Hrs

Data – Data for Excel – Data formats - Load the data from File - From other Workbook From Text/CSV file - From PDF - Load Data using Wolfram Data Intelligence – Pre- processing– Remove Duplicate values from Dataset – Dealing with Empty Rows – Apply Clean Function – Apply Trim Function – Lowercase all word

Unit II: Functions

- 12 Hrs

Common Functions - SUM- AVERAGE – MAX – MIN – COUNT – LEN – SUMIF - AVERAGEIF – DAYS – NOW–Numeric Functions – ISNUMBER – RAND –ROUND – MEDIAN – PI – POWER – MOD – ROMAN – Text Function –LEFT – RIGHT – MID – REPT – ISTEXT – FIND – SUBSTITUTE – REPLACE – CONCATENATE – Date and Time Functions – Date Time Function – DATE – DAYS – MONTH – MINUTE – YEAR – VLOOKUP function

Unit III: Text Mining

- 12 Hrs

Word counts in Excel - Sentence Count in Excel – Text Extraction - Keyword extraction in excel - Feature Extraction in excel - Entity Extraction in Excel - Text Classification – Machine Learning Algorithms for Text Classifications – Examples - Text Clustering – Text Clustering Algorithms

Unit IV: Data Analysis & Visualization

- 12 Hrs

Standard Deviation - Correlation – PCA – Linear Regression – T Test – ANOVA – Pivot table – Histogram – Pie Chart - Bar Chart - Scatter Plot – Area Chart – Heat map – Timelines – Gantt Chart – Highlight Chart – Bullet Chart

Unit V: Case Studies

- 12 Hrs

Healthcare – Finance – Telecommunication – Marketing & Sales – E-Commerce –Intrusion Detection – Market Basket Analysis – Financial/Banking Sector

Total Hours: 60

Reference Books:

1. Paul McFedries (2016), "*Excel 2016 Formulas and Functions*", Mr Excel Library QUE
2. Paul McFedries (2019), "*Microsoft Excel 2019 Formulas and Functions*", Microsoft Corporation Pearson Education, Inc.
3. Joan Lambert, Curtis Frye (2022), "*Microsoft Excel Step by Step (Office 2021 and Microsoft365)*", Microsoft Corporation by: Pearson Education, Inc.

E-Learning Resources:

1. <https://www.analyticsvidhya.com/blog/2020/06/5-useful-excel-tricks-analyst/>
2. <https://www.guru99.com/introduction-to-formulas-and-functions- in-excel.html>
3. <https://help.xlstat.com/6751-feature-extraction-tutorial-excel>
4. <https://monkeylearn.com/text-classification/>

Course Outcomes:

- CO1: Get familiar with Data and Preprocessing techniques.
- CO2: Familiarize with MS Excel basic functions.
- CO3: Enhance knowledge on text mining.
- CO4: Understand the concept of Data Analysis and Data Visualization.
- CO5: Experimental knowledge on Machine Learning functions with different datasets in Excel sheet.